

## **M19-510 Introduction to SAS for Clinical Research (1 credit)**

Fall 2020 (8/17/20 – 8/21/20)

Online Daily

Location: Taylor Avenue Building  
2nd floor, Richmond Room

### **INSTRUCTORS**

Nicole Ackermann, MPH – [nackermann@wustl.edu](mailto:nackermann@wustl.edu)

Sarah Humble, MS – [sarah.lyons@wustl.edu](mailto:sarah.lyons@wustl.edu)

### **OFFICE HOURS**

We will hold optional **daily** Zoom meetings from **11am-12pm EST**. Feel free to jump on and ask any questions related to the content for that day. We are also available by appointment. Please email both Nicole & Sarah when contacting the instructors to ensure the quickest response.

### **PREREQUISITES**

NONE

### **TARGET AUDIENCE**

Individuals who wish to gain an understanding of SAS® for basic data management and analysis

### **COURSE DESCRIPTION & OBJECTIVES**

This course is designed to introduce medical students, clinicians and health researchers to the SAS programming environment. Students will learn how to operate SAS; import external data; create SAS data sets; create, format and manipulate variables; and export data and results. Each session will consist of a combination of lecture and practical hands on exercises. Upon completion of this course, students will have obtained a basic understanding of the SAS environment.

This course typically runs daily 9am -12pm (when not remote) so students should expect to dedicate approximately that amount of time.

### **COMPETENCIES**

- Open & navigate the SAS statistical software
- Understand the SAS library concept, including temporary and permanent datasets
- Understand the importance of using syntax
- Know how to import/export, open/save data within SAS
- Troubleshoot problems and interpret errors in logs
- Know how to change and manipulate the contents of a dataset

### **Course Requirements & Software**

All Students are required to have SAS® available on their laptop for class. If you do not already have SAS, please download SAS University edition prior to the beginning of class. To install, please follow the instructions here: [https://www.sas.com/en\\_us/software/university-edition/download-software.html](https://www.sas.com/en_us/software/university-edition/download-software.html)

We have also made instructional videos available on Canvas that walk you through the process. There is a version for Mac and version for PC/Windows.

Students are **REQUIRED** to have SAS installed on their personal laptops **BEFORE THE FIRST CLASS (8/17/20)**.

Students without a working version of SAS on their laptop will be unable to complete the course.

### **Textbooks**

There are no required textbooks for this class, however the “The Little SAS Book” is highly recommended for all levels of SAS users.

**Note:** SAS University and SAS Studio look and function very similarly so resources mentioning SAS Studio are helpful for University edition also

### **SAS University/Studio Edition Specific:**

Der & Everitt. *Essential statistics using SAS university edition*. ISBN: 9781629598437; 1629598437. Available through Becker library electronically [here](#).

[Little SAS Book Supplement on SAS Studio](#).

### **SAS Desktop specific:**

Delwiche & Slaughter. *The Little SAS Book; A Primer, Fifth edition*. 2012. ISBN-10:1612903436

### **Resources**

[http://www.ats.ucla.edu/stat/sas/notes/default\\_93.htm](http://www.ats.ucla.edu/stat/sas/notes/default_93.htm)

<http://www.amazon.com/The-Little-SAS-Book-Edition/dp/1612903436>

### **GRADING**

Your grade will be based on:

- Class participation (15%)
- Homework & Quizzes (55%)
- Final Exercise (30%)

### **Grading Scale**

Pass/Fail

### **CLASS PARTICIPATION**

Class participation will be assessed based on completion of materials, including watching lectures and software demonstration videos. We would also like you to post once in the discussion board introducing yourself and

listing your name, position (medical student, resident, etc.), and any previous experience with data analysis software (Stata, SPSS, R, etc.). We also encourage you to drop into the daily Zoom office hours with questions, if possible.

### **POLICY ON LATE ASSIGNMENTS**

Late assignments will result in a deduction of one grade point (A+ down to A) for each day late (including weekends) unless prior approval is obtained from the instructor or a compelling situation prevents prior approval (i.e. documented health issues or family emergencies).

### **ASSIGNMENTS & DUE DATES**

Homework assignments and quizzes will be released after completion of that module/topic. Due to the short length of the course & to maintain appropriate pacing, assignments are due the following morning of the assigned 'day' by 9am.

The final exercise will be released for all students at midnight on Thursday (8/20) and must be completed by midnight on Friday (8/21). This will also be timed at 3 hours maximum (we anticipate it should not take the full three hours). Please let us know by 8/19 if you need accommodations for this final timeline.

Week	Date	Topic	Assignment Due (by 9am on day listed)
Module 1	Aug. 17	<ul style="list-style-type: none"> <li>Brief discussion about data and data types</li> <li>Discuss importance of syntax, reproducibility, using comments</li> <li>Opening SAS, the SAS environment, etc.</li> <li>Defining libraries, temporary/permanent datasets</li> </ul>	<b><i>Have SAS on laptop!</i></b>
Module 2	Aug. 18	<ul style="list-style-type: none"> <li>Importing/opening/exporting/saving data</li> <li>Format and label data</li> <li>Merging, appending, and sorting data</li> </ul>	HW1 Quiz 1
Module 3	Aug. 19	<ul style="list-style-type: none"> <li>Creating and recoding variables</li> <li>Missing values</li> <li>Functions</li> </ul>	HW2 Quiz 2
Module 4	Aug. 20	<ul style="list-style-type: none"> <li>Diagnostic procedures and troubleshooting errors</li> <li>Outputting data and results</li> </ul>	HW3 Quiz 3
Module 5	Aug. 21	<ul style="list-style-type: none"> <li>Course review and <b>final exercise</b></li> </ul>	HW4

### **DROP DATES**

You may drop for any reason during the course of the semester. However, you may only receive a partial or no tuition reimbursement depending upon how far into the semester you drop the course. See the [MPHS Student Handbook](#). Late withdrawals will appear on your transcript as a withdrawal.

### **MPHS Academic Policy Guidelines:**

Guidelines regarding MPHS course registration and enrollment, grades, tuition obligation, and academic leave are consolidated in the [MPHS Student Handbook](#). Please review this document.

## **MPHS Guidelines for Academic and Non-Academic Transgressions:**

By registering for this course you have agreed to the terms of the **MPHS Academic Integrity Policy**, outlined below and in more detail in the [MPHS Student Handbook](#). Please review this policy before submitting your first graded assignment.

### **Academic Integrity/Plagiarism Policy:**

- Academic dishonesty is a serious offense that may lead to probation, suspension, or dismissal from the University. Academic dishonesty includes plagiarism (the use of someone else's ideas, statements, or approaches without proper citation). Academic dishonesty also includes copying information from another student, submitting work from a previous class for a new grade without prior approval from your instructor, cheating on exams, etc. You are responsible for reviewing [WashU's academic integrity resources](#) to become aware of all the actions that constitute academic dishonesty.
- All instances of academic dishonesty will be reported to the Office of the Registrar for investigation and potential disciplinary action. In addition, the instructor will make an independent decision about the student's grade on any assignment in question. The MPHS process regarding academic dishonesty is described in the [MPHS Student Handbook](#)

### **DISABILITY RESOURCES**

It is the goal of Washington University to assist students with disabilities in removing the barriers their disabilities may pose and provide support in facing the challenge of pursuing an education at Washington University.

Washington University recognizes and accepts its professional, legal and moral responsibility to avoid discrimination in the acceptance and education of qualified students with disabilities and to provide reasonable accommodations to such students consistent with the principles embodied in the law. These guidelines apply to students seeking admittance as well as to those who become disabled while they are enrolled.

Washington University makes every effort to insure that all qualified applicants and students can participate in and take full advantage of all programs and opportunities offered within the university. Washington University encourages and gives full consideration to all applicants for admission. Washington University does not discriminate in access to its programs and activities on the basis of age, sex, sexual orientation, race, disability, religion, color or national origin.

To learn more about services provided to students with disabilities, initiate the process of formal documentation and/or to arrange for accommodations, please review the [Disability Resources](#) for the Med School at the start of the course.

### **MENTAL HEALTH RESOURCES**

Mental Health Services' professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: [shs.wustl.edu/MentalHealth](https://shs.wustl.edu/MentalHealth).

### **SEXUAL ASSAULT RESOURCES**

You can also speak confidentially and learn about available resources by contacting [Dr. Gladys Smith, PhD](#), Sexual Violence Prevention Therapist and Licensed Psychologist at the Medical Campus, (314) 362-2404.

Additionally, you can report incidents to the Office of Student Affairs or by contacting WUSM Protective Services 314-362-4357 or your local law enforcement agency.

### **BIAS RESOURCES**

The University has a process through which students and staff who have experienced or witnessed bias, prejudice or discrimination against a student can report their experiences to the University's Bias Report and Support System (BRSS) team. For details see: [diversityinclusion.wustl.edu/brss/](https://diversityinclusion.wustl.edu/brss/).

### **Office of the Associate Vice Chancellor for Diversity, Equity and Inclusion (DEI)**

**The DEI Training Team** designs, facilitates and leads diversity education programming for faculty, staff and students on a wide range of topics including: creating a climate of respect, the value of diversity and the role of biases in our day-to-day lives.  
[diversity.med.wustl.edu/training/](https://diversity.med.wustl.edu/training/)

**The Office of Diversity Programs** promotes diversity among and prepares medical students to lead in a global society. A priority for the Office of Diversity Programs is to cultivate and foster a supportive campus climate for students of all backgrounds, cultures and identities.  
[mddiversity.wustl.edu/](https://mddiversity.wustl.edu/)

**The Diversity and Inclusion Student Council** promotes an inclusive campus environment for all School of Medicine students.  
[sites.wustl.edu/disc/](https://sites.wustl.edu/disc/)

**The Office for International Students and Scholars** embraces the university's mission of welcoming promising students from around the world.  
[wumma.wustl.edu/](https://wumma.wustl.edu/)